

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT1946-1912	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/1129	International filing date (day/month/year) 08.10.2003	Priority date (day/month/year) 08.10.2002
International Patent Classification (IPC) or both national classification and IPC A61K47/48		
Applicant BIOTECHNOLOGIE-GESELLSCHAFT MITTELHESSEN MBH et al		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 10 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the International application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 07.05.2004	Date of completion of this report 15.12.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Armandola, E Telephone No. +49 89 2399-7493 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/11129**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-28 as originally filed

Claims, Numbers

1-30 received on 28.10.2004 with letter of 28.10.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-30
	No: Claims	
Inventive step (IS)	Yes: Claims	1-30
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT.- SEPARATE SHEET**

International application No. PCT/EP 03/11129

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: WO 98/56424 a (CASSIDY JAMES ;DUNCAN RUTH (GB); GERMAN LISA (GB); HIRST DALE (GB)) 17 December 1998 (1998-12-17)
D2: US-a-5 622 718 (DUNCAN RUTH ET AL) 22 April 1997 (1997-04-22)
D3: US-a-5 470 843 (KRETZSCHMAR GERHARD ET AL) 28 November 1995 (1995-11-28)
D4: WO 03/059246 a (LAPIDOT AVIVA ;YEDA RES & DEV (IL); UNIV OHIO (US); GOPALAN VENKAT) 24 July 2003 (2003-07-24)

Novelty (Art. 33(2) PCT)

Claims 1-30 can be considered novel as none of them describes a compound of the formula of claim 1 wherein the saccharide (S) is a mono-, di- or trisaccharide and wherein at least one saccharide unit is derived from an aldose monosaccharide comprising a free aldehyde group, its production or pharmaceutical application.

The polymer-drug conjugate of D1 contains a dextrine in a m.w. range of 1,000-200,000 Da. This is not a mono-, di- or trisaccharide.

The same holds true for the alginate-drug complex of D2, in which the alginate has a m.w. of 2,000-1,000,000 Da.

In D3 the carbohydrate comprises 1-20 monosaccharide units and is not limited to mono-, di- and tri-saccharides.

Inventive step (Art. 33(3) PCT)

The problem to be solved by the present application is the provision of a pharmaceutical composition in the form of a conjugate, which allows the solubilization of a high amount of the pharmaceutically active substance without yielding a viscous solution.

The problem is solved by a conjugate of a pharmaceutically active substance with an (oligo)saccharide (i.e. a mono-, di- or trisaccharide).

**INTERNATIONAL PRELIMINARY
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None of the prior art documents gives any hints that might have led the skilled person to the solution presented in the application as they deal with conjugates wherein the carbohydrate is a polymer larger than a mono-, di- or trisaccharide. Claims 1-30 are considered inventive.